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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,282	02/10/2004	Ramachandran Venkatesh	MSFT-3029/307007.01	1161

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EXAMINER
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FLEURANTIN, JEAN B

ART UNIT	PAPER NUMBER
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2162

DATE MAILED: 10/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/775,282	Applicant(s) VENKATESH ET AL.	
	Examiner JEAN B. FLEURANTIN	Art Unit 2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-32 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This is in response to the application filed on 10 February 2004, in which claims 1-32 are presented for examination.

### ***Drawings***

2. The Examiner accepts the Formal Drawings (filed 02/10/04).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1- 15 and 17-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S Patent No. 5,864,862 issued to Kriens et al ("hereinafter Kriens") in view of U.S Patent No. 5, 297,279 issued to Bannon et al ("hereinafter Bannon").

As per claim 1, Kriens discloses, "a method for creating a user-defined type in a database system" (see col. 20, lines 52-56), comprising:

"receiving code that implements a class defining the structure of a user-defined type and methods that can be invoked on instances of the user-defined type" as the value object of a user defined type and refer to a type class that can manipulate the value (see col. 15, lines 34-36), and col. 12, lines 56-60, and col. 16, lines 11-19;

"a second requirement that the class be capable of returning a null value for the user-defined type" as a user defined type and can represent as an instance of the class integer type (see col. 15, lines 21-26); and

"a third requirement that the class provide a method for converting the user-defined type to another type" as type classes implement methods for converting and accessing information from this value object (see col. 15, lines 42-45). Kriens fails to explicitly disclose steps of enforcing a contract against the class, the contract comprising: a first requirement that the class specify one of a plurality of different formats for persisting instances of the user-defined type in a database store; and enabling instances of the user-defined type to be created only when the class meets the requirements of the contract. However, Bannon discloses the name(s) of any classes from which this class is to be derived, persistent that indicates whether or not instances of this class should become independent persistent objects when saved to the database (see Bannon col. 12, lines 34-53). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combined teachings of Kriens and Bannon with a first requirement that the class specify one of a plurality of different formats for persisting instances of the user-defined type in a database store; and enabling instances of the user-defined type to be created only when the class meets the requirements of the contract. Such modification would allow the teachings of Kriens and Bannon to provide support for long term storage and retrieval of objects created by application programs written in object oriented programming languages (see Bannon col. 1, lines 10-12), and a database management system and method which

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uses a uniform object translation methodology thereby eliminating the need for application developers to perform this complex computer and language dependent task (see Bannon col. 6, lines 30-35).

As per claims 2 and 18, Kriens further discloses, "storing metadata about the user-defined type for subsequent use by the database system in creating instances of the user-defined type" (see col. 22, lines 21-67).

As per claims 3 and 19, in addition to claim 1, Kriens further discloses, "a second format in which an instance of the user-defined type is serialized in a manner defined by the class" (see col. 15, lines 21-26).

As per claims 4 and 20, Kriens discloses, "wherein the plurality of different formats for persisting instances of the user-defined type further comprises a third format in which an instance of the user-defined type is serialized in accordance with a method provided by the MICROSOFT .NET FRAMEWORK" (see col. 15, lines 42-65).

As per claims 5 and 21, the limitations of claims 5 and 21 are rejected in the analysis of claim 1, and these claims are rejected on that basis.

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As per claims 6 and 22, Kriens further discloses, "instantiating the user-defined type as one of a column value in a table, a variable, a parameter of a routine, and a return value of a routine" (see col. 8, lines 30-62).

As per claims 7 and 23, Kriens further discloses, "receiving an expression in the query language of the database system" (see col. 15, lines 8-10), "wherein evaluation of the expression requires invocation of a method of an instance of the user-defined type" (see col. 15, lines 34-36);

"translating the expression into a sequence of program code instructions that invoke the required method on the instance of the user-defined type" (see col. 15, lines 42-45);

"invoking the method upon execution of the program code" (see col. 12, lines 31-33); and

"returning a result of the method invocation as the evaluation of the query language expression" (see col. 19, lines 15-17).

As per claims 8 and 24, Kriens discloses, "wherein said method further comprises deserializing the instance of the user-defined type prior to invoking the method on the instance" (see col. 15, lines 34-36).

As per claims 9, 25 and 32, the limitations of claims 9, 25 and 32 are rejected in the analysis of claim 1, and these claims are rejected on that basis.

As per claims 10 and 26, in addition to claim 1, Kriens further discloses, "wherein the method further comprises invoking the mutator method on an instance of the user-defined type to change the value of the instance" (see col. 12, lines 56-60), and column 15, lines 34-36.

As per claims 11 and 27, in addition to claim 10, Kriens further discloses, "deserializing the instance of the user-defined type" (see col. 15, lines 34-36).

As per claims 12 and 28, Kriens further discloses, "wherein the class defining the structure and method of the user-defined type further comprises an attribute that specifies that serialized binary representations of instances of the user-defined type will be binary ordered" (see col. 3, line 66 to col. 4, line 7).

As per claims 13 and 29, Kriens further discloses, "serializing instances of the user defined type such that the binary representations of the instances are binary ordered" (see col. 3, line 66 to col. 4, line 7);

"receiving an expression in a query language of the database system that requires the comparison of a first instance of the user defined type to a second instance of the user defined type" (see col. 15, lines 42-45); and

“comparing the serialized binary representations of the first and second instances of the user-defined type to evaluate the expression, without deserializing either instance” (see col. 3, line 66 to col. 4, line 12).

As per claims 14 and 30, Kriens further discloses, “creating a table in a database store in which a type of a column of the table is defined as the user-defined type” (see col. 4, line 39 to col. 5, line 38); and

“creating an index on the column” (see col. 4, lines 39-67).

As per claims 15 and 31, in addition to claim 12, Kriens further discloses, generating a computed column over the expression” (see col. 4, line 39 to col. 5, line 38); and

“creating an index over the computed column” (see col. 4, lines 39-67).

As per claim 17, Kriens discloses, “a database system” (see col. 20, lines 52-56), comprising:

“a runtime that provides code execution within the database system” (see col. 12, lines 31-33); and

“a database server that receives code that implements a class defining the structure of a user-defined type and methods that can be invoked on instances of the user-defined type” as the value object of a user defined type and refer to a type class



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that can manipulate the value (see col. 15, lines 34-36), and col. 12, lines 56-60, and col. 16, lines 11-19, the contact comprising:

“a second requirement that the class be capable of returning a null value for the user-defined type” as a user defined type and can represent as an instance of the class integer type (see col. 15, lines 21-26); and

“a third requirement that the class provide a method for converting the user-defined type to another type” as type classes implement methods for converting and accessing information from this value object (see col. 15, lines 42-45). Kriens fails to explicitly disclose a first requirement that the class specify one of a plurality of different formats for persisting instances of the user-defined type in a database store; and the database server enabling instances of the user-defined type to be created only when the class meets the requirements of the contract. However, Bannon discloses the name(s) of any classes from which this class is to be derived, persistent that indicates whether or not instances of this class should become independent persistent objects when saved to the database (see Bannon col. 12, lines 34-53). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combined teachings of Kriens and Bannon with a first requirement that the class specify one of a plurality of different formats for persisting instances of the user-defined type in a database store; and the database server enabling instances of the user-defined type to be created only when the class meets the requirements of the contract. Such modification would allow the teachings of Kriens and Bannon to provide support for long term storage and retrieval of objects created by application programs written in object oriented programming

languages (see Bannon col. 1, lines 10-12), and a database management system and method which uses a uniform object translation methodology thereby eliminating the need for application developers to perform this complex computer and language dependent task (see Bannon col. 6, lines 30-35).

***Allowable Subject Matter***

4. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Prior Art***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bannon et al. US Patent No. 5,437,027 relates to database management systems and more particularly to a system and method providing support for long-term storage and retrieval of object created by application programs written in object-oriented programming languages. Iwata et al. US Patent No. 6,564,205 relates to a database management system. C. J. Harrison et al. Structure Editors: User-Defined Type Values and Type Interference, relates to concrete representations for values of user-defined types.

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### CONTACT INFORMATION


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEAN B. FLEURANTIN whose telephone number is 703 - 308-6718 (NEW 571-272-4035). The examiner can normally be reached on 7:05 to 4:35.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BREENE can be reached on 703 - 305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jean Bolte Fleurantin

October 14, 2004

  
SHAHID ALAM  
PRIMARY EXAMINER